

Notice of Allowability

Application No.

09/529,192

Examiner

Wesley D Markham

Applicant(s)

JUNG ET AL.

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 7/12/2004.
2. ☒ The allowed claim(s) is/are 1,5-9 and 12-36.
3. ☒ The drawings filed on 26 June 2000 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

WDM



DETAILED ACTION / ALLOWANCE

Response to Amendment

1. Acknowledgement is made of the amendment filed by the applicant on 7/12/2004, in which independent Claims 1, 14, 23, and 24 were amended to explicitly require "coating" of the substrate instead of "surface treatment" of the substrate. **Claims 1, 5 – 9, and 12 – 36** are currently pending in U.S. Application Serial No. 09/529,192, and an Office Action on the merits follows.

Drawings

2. The formal drawings (2 sheets, 4 figures) filed on 6/26/2000 are approved by the examiner.

Allowable Subject Matter

3. Claims 1, 5 – 9, and 12 – 36 are allowed.
4. The following is an examiner's statement of reasons for allowance: Independent Claims 1, 14, 23, and 24 are all directed to a method / device for coating at least one electrically conducting substrate or a substrate that has been coated so as to be electrically conducting, the coating being carried out by a hollow-cathode glow discharge in which the substrate surfaces restrict the discharge region and form the hollow-cathode. Claims 1 and 14 also require that the substrate surfaces be supplied by one of two flat, parallel substrates or at least one continuously moving band-shaped substrate, and that the discharge is / can be activated by only one of a DC

voltage, a pulsed DC voltage, and an AC voltage having a frequency of up to 50 MHz. Independent Claims 23 and 24 also require that various elements of the surface treatment process / device be integrated outside of the discharge region. A summary of the closest prior art of record follows. While Yamada (JP 63-026373 A) teaches treating the surfaces of an electrically-conductive substrate by using a hollow-cathode glow discharge process / device in which the substrate itself acts as the cathode, the substrate taught by Yamada is a tube, not two flat, parallel substrates or at least one continuously moving band-shaped substrate, as required by independent Claims 1 and 14. Additionally, the means for supplying gas in Yamada is located inside of the tube (i.e., within the discharge region), not outside of the discharge region as required by independent Claims 23 and 24. Echizen et al. (USPN 5,527,391) does not teach or reasonably suggest the types of activating voltages (DC, pulsed DC, and AC up to a specific frequency) required by amended independent Claims 1 and 14 or the integration of the process / device elements outside of the discharge region required by amended independent Claims 23 and 24. Coleman (USPN 3,068,510) teaches a method / device for treating two electrically-conductive, continuously moving, parallel, band-shaped substrates by a glow discharge process in which a voltage (i.e., a potential difference) is applied between the two substrates, thereby causing the substrates to act as "electrode-like surfaces". After careful consideration, the examiner notes that, in the process of Coleman, one of the substrates acts as the cathode (i.e., the more negatively charged substrate) and the other substrate acts as the anode (i.e., the more

positively charged substrate), and therefore the glow-discharge in Coleman is not a "hollow-cathode glow discharge" in which the substrate surfaces enclose the discharge region and form a hollow-cathode, as required by the applicant's claims. Izu et al. (USPN 5,411,591) teaches a method / device for the microwave deposition of films onto a continuously moving, band-shaped substrate that encloses the discharge / deposition region on both sides. However, Izu et al. does not teach or reasonably suggest that the band-shaped substrate can or does form a "hollow-cathode", as required by the applicant's claims. Fukui et al. (USPN 4,894,546) teaches a process in which the inside surfaces of a hollow cathode target are etched / sputtered to produce an ion beam that exits the cathode, but does not teach or suggest that the hollow cathode target is, or is capable of, being coated by a hollow-cathode glow discharge in the process / device, as required by the applicant's claims. Davidse et al. (USPN 3,627,663) teaches coating a substrate that is located inside a target, which is itself located inside a tube or two parallel plates that act as a hollow-cathode and produce a hollow-cathode glow discharge. As such, the substrate surfaces in the process / device of Davidse et al. do not restrict the discharge region and form the hollow-cathode, as required by the applicant's claims. For the above reasons, the prior art of record, alone or in reasonable combination, does not teach or suggest each and every limitation of the applicant's independent Claims 1, 14, 23, and 24, and these claims are allowed. The dependent claims are allowed for the same reasons.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/529,192
Art Unit: 1762

Page 6

WDM

WDM

Wesley D Markham
Examiner
Art Unit 1762



SHIRVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700